VIA FACSIMILE 1-703-872-9306

15-CT-5419
PATENT

IN THE CLAIMS

1. (currently amended) A method for imaging an organ of a patient comprising the steps of:

scanning a volume of a patient's body including an organ of the patient with a computed tomographic (CT) imaging system having a radiation source and a detector array coupled to a rotating gantry, the detector array having a z-direction parallel to an axis of rotation of the gantry and an x-direction transverse to the z-direction;

acquiring attenuation data from a plurality of staggered half detector segments of the detector array, wherein said staggered half detector segments are separated by a gap therebetween, said staggered half detector segments are abutted in regions about a centerline extending in the z-direction, and said staggered half detector segments include at least a first type of detector module having a cable extending into the gap; and

reconstructing an image including the patient's organ using the acquired attenuation data.

2. (original) A method in accordance with Claim 1 wherein said step of acquiring attenuation data comprises acquiring attenuation data having different resolutions as a function of position in the x-direction in each said half detector segment.

3. (previously presented) A radiation detector for an imaging system, said radiation detector having a centerline extending in a z-direction and comprising a plurality of staggered half detector segments abutted in regions about said centerline and separated from one another by a gap, said staggered half detector segments each comprising a plurality of detector modules, and said plurality of detector modules include at least a first type of detector module having a cable extending into the gap.

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4. (previously presented) A radiation detector in accordance with Claim 3, wherein said cable is a flexible cable extending in one direction, and said staggered half detector segments include a second type of module having flexible cables extending therefrom in two directions.

5. (previously presented) A radiation detector in accordance with Claim 4 wherein said first type of detector module straddles the centerline in each half detector segment.

6. (previously presented) A radiation detector in accordance with Claim 5 wherein said flexible cable of said first type of detector module includes a pre-formed right angle bend.

7. (previously presented) A radiation detector in accordance with Claim 4 wherein said radiation detector has an x-direction and the z-direction, and said second type of detector module is included within a plurality of modules configured to provide different numbers of outputs per module as a function of location in the x-direction.

8. (previously presented) A radiation detector in accordance with Claim 7 wherein said second type of detector module includes a plurality of detector cells extending in the x-direction and the z-direction, including paired cells.

9. (previously presented) A radiation detector in accordance with Claim 3 wherein said cable is a flexible cable extending in one direction, said staggered half detector segments include a second type of detector module having flexible cables extending therefrom in two directions, and a set of rails to which said first type of detector module and said second type of detector module are mounted, said rails extending in front of said second type of detector module and behind said first type of detector module.

10. (previously presented) A detector array in accordance with Claim 9 and further comprising a set of collimator plates extending in the z-direction, said collimator plates

extending over a single said detector module of said second type and extending over a plurality of detector modules of said first type.

11. (original) A detector array in accordance with Claim 3 wherein said detector modules are removeable.

12. (previously presented) A computed tomographic (CT) imaging system for imaging an organ of a patient, said CT system comprising:

a rotating gantry having an axis of rotation, wherein the axis lies along a z-direction;

a radiation source configured to rotate with the rotating gantry; and

a multislice detector array configured to rotate with the rotating gantry and configured to acquire attenuation data from a patient between the radiation source and the detector, said detector array comprising a plurality of staggered half-detector segments separated from one another by a gap and configured to provide attenuation data having a relatively higher spatial resolution near a centerline extending in the z-direction of said detector array and a relatively lower spatial resolution distal to said centerline, wherein said staggered half detector segments include at least a first type of detector module having a cable extending into the gap;

a data acquisition system configured to receive attenuation data from the detector, including the relatively lower spatial attenuation data and the relatively higher spatial resolution attenuation data, and

an image reconstructor configured to utilize the attenuation data to reconstruct an image of the organ, including utilizing the relatively lower spatial resolution data, to thereby reduce artifacts in the image.

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13. (previously presented) A CT imaging system in accordance with Claim 12 wherein said cable is a flexible cable extending in one direction, and said staggered half detector segments include a second type of module having flexible cables extending therefrom in two directions.

14. (previously presented) A CT imaging system in accordance with Claim 13 wherein said first type of detector module straddles the centerline in each half detector segment.

15. (previously presented) A CT imaging system in accordance with Claim 14 wherein said flexible cable of said first type of detector module includes a pre-formed right angle bend.

16. (currently amended) A CT imaging system in accordance with Claim 13 wherein said ~~radiation~~ detector array has an x-direction and the z-direction, and said second type of detector module is included within a plurality of modules configured to provide different numbers of outputs per module as a function of location in the x-direction.

17. (previously presented) A CT imaging system in accordance with Claim 16 wherein said second type of detector module includes a plurality of detector cells extending in the x-direction and the z-direction, wherein the plurality of detector cells include paired cells.

18. (previously presented) A CT imaging system in accordance with Claim 12 wherein said cable is a flexible cable extending in one direction, and said staggered half detector segments include a second type of detector module having flexible cables extending therefrom in two directions, and a set of rails to which said first type of detector module and said second type of detector module are mounted, said rails extending in front of said second type of detector module and behind said first type of detector module.

19. (previously presented) A CT imaging system in accordance with Claim 18 and further comprising a set of collimator plates extending in the z-direction, said collimator plates

including collimator plates extending over a single said detector module of said second type and collimator plates extending over a plurality of detector modules of said first type.

20. (previously presented) A CT imaging system in accordance with Claim 12 wherein said first type of detector module is included within a plurality of detector modules that are removable.